

PLATINUM PLAN ANALYZER

EXPLAIN SERVICES

by Michelle Metcalf

This document **is not** intended to be complete. In most cases you should reference your user manuals to look up complete and comprehensive information concerning the topics. This document will walk you through generating basic explains. Because there are quite a few parameters with different options I chose to keep this document simple. When you feel comfortable with the options listed here feel free to explore and run explains using some of the other options available. The focal point of this document is at a program level and free form SQL statement level, however the explain can be done at a plan level.

The DBM group recommends the programmer analyze the Explain results at the unit level, the programmer along with the analyst at the string level. At the cat level the programmer and analyst review the results and contact a DBM representative to help answer problems and questions.

I. Overview

Plan Analyzer is a tool that will identify how application programs access data. A good understanding of the programs intentions and knowledge of data access are essential to controlling plan, package, and system performance. Using **Plan Analyzer** you no longer have to translate the encoded DB2 Explain output from the plan table. **Plan Analyzer's** explain output provides detailed information on access path choices and the factors that led to the path choice. Enhanced Explain output is presented in several easy-to-read reports: Summary, Access Path Analysis, Predicate Analysis, Object Dependency, Referential Integrity, Catalog Statistics and SQL Analysis.

Summary - lists all SQL statement numbers, SQL statement types (SEL,UPD..) and SQL return codes.

Access Path Analysis - tells you how DB2 is going to retrieve the data from the tables being accessed.

Predicate Analysis - displays all predicates involved in the SQL statement and indicates if the predicate is indexable or Stage I processing.

Object Dependency - displays all object dependency information for an SQL statement. This is a very useful report when you want to see all of the actual objects that are referenced by an SQL statement.

Referential Integrity - this report displays once per Explain and displays at the end of each Explain source listing. It shows the reference of defined referential relationships.

Catalog Statistics - displays all pertinent DB2 catalog statistics in an easy-to-read format for all DB2 objects referenced by the SQL statement. This report is broken into 2 sections. Section I stats are used by the BIND process. Section II stats are used for DBA tuning.

SQL Analysis - this gives you additional information that helps you understand why the DB2 optimizer chose the path that it did. This report also lists recommendations for SQL changes that would improve locking and data access.

The contents of this document will focus on the following options from the **Plan Analyzer** main menu:

- 1) Quick Explain
- 2) EXPLAIN Strategy Services

Quick Explain

The Quick Explain option provides an easy method of grouping SQL sources for ad hoc Enhanced Explain.

Explain Strategy Services

Explain Strategy Services allows you to save the grouped SQL sources. Once a strategy is created, it can be explained

over and over. Each time an explain is executed against a strategy, the results of the explain are saved as a version of

that strategy.

The main difference between Quick Explain and Explain Strategy Services is that the results of the Enhanced Explain processing cannot be saved with Quick Explain.

Both options also support multiple subsystem EXPLAINS. Enhanced Explain processing enables you to EXPLAIN a plan or package on any DB2 subsystem, without moving the plan or package. You simply specify the target subsystem ID (SSID), and PPA does the rest. This gives you a method for tuning applications on DBT (test) without having to guess how they will perform when bound on DB2 (production).

II. Quick Explain

This section will walk you through some examples of using Quick Explain. There are two different ways to use Quick Explain. One is by using Expert Mode meaning you can explain an existing package (bound). The second option is using Regular mode which allows you to execute free form SQL statements stored in a file (not bound).

A. The first example will be using Regular mode.

1) To make sure your profile is set up with the Regular mode option select P and press <enter> on the Plan Analyzer Main Menu. The PPA Profile Menu will appear.

```
PPPROF R02.01 ----- PPA Profile Menu ----- 05-06-99  11:13
```

```
OPTION ====>
```

```
----- DBMZ657
```

1 - Global Profile Variables

2 - PPA Profile Variables

2) Select option 2 and press <enter>. The PPA Profile Variables screen will appear.

3) Make sure the the Expert Mode default is set to N.

```
PPPROF1 R02.01 ----- PPA Profile Variables ----- 05-06-99  11:13
```

```
COMMAND ====>
```

General Execution Parameters:

Qualifier ON/OFF default ====> N (Y=ON or N=OFF)

Explode SQL ON/OFF default ====> Y (Y=Exploded or N=Shrunk)

Strategy List Mode default ====> L (L=List versions)

ACM ==> OFF ACMID ==> DBMZ657 SQLID ==> DBMADM

ANALYZERS	CATALOG FACILITY	GENERAL FACILITIES
D Database Analyzer	1 RC/Query	E General Selections
DT Detector	2 RC/Migrator	X Exit PLATINUM products
LA Log Analyzer	3 RC/Update	
P Plan Analyzer	4 RC/Secure	

6) From Plan Analyzer Main Menu enter 1 and press <enter>

15:47 PPM R02.01 ----- PLATINUM Plan Analyzer Main Menu ----- 05-05-99

COMMAND ==> 1

ACM ==> OFF VSAM ==> OFF Mode ==> O ONLINE

----- DBMZ657

Location ==> LOCAL DB2 SSID ==> DBT Version ==> V5R1M0

EXPLAIN Services

Reporting Services

1) Quick EXPLAIN

6) Plan Reporting

2) EXPLAIN Strategy Services

7) DBRM Reporting

3) Query EXPLAIN Database

8) Package Reporting

4) Compare EXPLAIN Versions

9) Object Reporting

5) Update Expert System Rules

10) Statement Reporting

Plan/Package Management

Miscellaneous Functions

- 11) Identify Problem Plan/Package(s) A) Administrative Functions
 - 12) Identify Problem SQL P) Profile
 - 13) Plan/Package Utilities S) Statistics Manager
 - 14) Create User PLAN_TABLE(s) T) Tutorial
- BP) Batch Processor/Submit
- X) Exit Plan Analyzer

7) The PPA Quick Explain screen appears. Fill in the Type, Plan/Collid, DBRM/Package and make sure the DB2 SSID is specified correctly (DBT for test, DB2 for production). Also enter Y for Change Options.

PPQENE R02.01 ----- PPA Quick Explain ----- 05-05-99 15:52

COMMAND ==>>

----- DBMZ657

Location ==>> LOCAL DB2 SSID ==>> DBT Target SSID ==>> DBT

Specify the name of the plan or package that is to be explained or enter selection criteria to view a selection list.

Type ==>> P (P - Plan or K - Package)

Plan/Collid ==>> DBMBATC0

DBRM/Package ==>> DBM103

Selection List ===> Y (Y - Display plan or package selection list)
(N - Execute explain with selection criteria)

Change Options ===> Y (Y or N)

Profile ===>

8) On the PPA Quick Explain - Explain Options screen enter Y for Update SQL qualifiers, enter the Explain Type of your choice - either C for current or F for future.

PPQEE0 R02.01 ----- PPA Quick Explain - Explain Options ----- 05-06-99
11:22

COMMAND ===>

----- DBMZ657

Database Options	===> N	Historical Database Options
Primary AUTHID	===> DBMZ657	Secondary AUTHID ===>
DBMADM		
Update SQL Qualifiers	===> Y	(Override SQL and View Qualifiers)
Rule Set SSID	===> DBT	(Subsystem where Rule Sets are stored)
PLAN_TABLE Option	===> R	(C - Commit, R - Rollback)
Explain Type	===> F	(C - Current, F - Future)
Plan Explain Option	===> P	(D - DBRM, P - Package, B - Both)

Process Views (Y, N)	====> N	Parallelism Degree	====>
Target SSID @DEFAULT	====> DBT	Target Rule Set	====>
Uppercase Output	====> N	Access Path Filter	====> N
Reports	====> Y	Search Conditions	====> N
Catalog Statistics	====> N	Search Filters	====> N
Tie PERFORMANCE Data	====> Y		

9) Enter the correct qualifier which is the creator of the DB2 tables the program is dependent on.

PPQEOQ R02.01 ----- PPA Quick Explain - SQL Qualifiers ----- 05-06-99
11:29

COMMAND ====>

----- DBMZ657

Enter SQL Qualifier:

SQL Qualifier ID ====> xxxADxx (To qualify non-catalog SQL)

SQL Qualifier Override ====> (Override unqualified catalog SQL)

Enter View Qualifier:

If nothing specified for view

Createdby will be used

View Qualifier ID ==>

(To qualify views)

Use View Creator ==> N

(Use View Creator to qualify views)

When you press enter the PPA Quick Explain - Explain Options screen appears. Press enter again and the PPA Batch Processor Card Display screen will appear.

10) Review the Card Display screen to see if the information is correct.

- If changes are needed use F3 to back out when necessary OR type CAN on the command line to cancel the screen.

- If changes are not needed press enter to submit. A Batch Processor In-Progress screen will briefly appear before the Audit Message File screen appears.

11) Print and/or review the report. Make any necessary changes. See attachment A for a sample report.

B. The second example is using *Expert mode*.

** your SQL statement you want to explain must already exist in a file or PDS to continue.

1) To make sure your profile is set up with the Expert mode option on select P and press <enter> on the Plan Analyzer Main Menu. The PPA Profile Menu will appear.

PPPROF R02.01 ----- PPA Profile Menu ----- 05-06-99 11:13

OPTION ==>

----- DBMZ657

1 - Global Profile Variables

2 - PPA Profile Variables

2) Select option 2 and press <enter>. The PPA Profile Variables screen will appear.

3) Make sure the the Expert Mode default is set to Y.

```
PPPROF1 R02.01 ----- PPA Profile Variables ----- 05-06-99 11:13
```

```
COMMAND ===>
```

General Execution Parameters:

Qualifier ON/OFF default ===> N (Y=ON or N=OFF)

Explode SQL ON/OFF default ===> Y (Y=Exploded or N=Shrunk)

Strategy List Mode default ===> L (L=List versions)
(N=Do not list versions)

Expert Mode default ===> Y (Y=Expert, N=Regular)

Display Batch Processor Input

Screen default ===> Y (Y or N)

Package version(s) default ===> L (A=All, L=Latest version)

Package versioning method ===> N (N=None, A=Auto, O=Creation)

Package replace version default ===> Y (Y or N)

Platinum Editor default ===> N (Y=Platinum Editor, N=ISPF Editor)

7) The following screen appears. Enter COPY on the command line as well as a A on the first line.

```
File Edit Confirm Menu Utilities Compilers Test Help

EDIT   PPA:CURRENT-SQL-STATEMENT           Columns 00001
00072

Command ==> copy                           Scroll ==> CSR

***** Top of Data
*****

==MSG> -Warning- The UNDO command is not available until you change
==MSG>      your edit profile using the command RECOVERY ON.

a00001

000002

000003

000004

000005

***** Bottom of Data
*****
```

8) On this edit/copy screen enter the file name where your SQL statement is stored.

```
Edit/View - Copy

Command ==>
```


Command ==>

Scroll ==> CSR

```
***** Top of Data  
*****
```

==MSG> -Warning- The UNDO command is not available until you change

==MSG> your edit profile using the command RECOVERY ON.

000001

000002 SELECT SUM(QUANTITY)

000003 INTO :WS-CHG-QTY-SOLD

000004 FROM INM_SALE_LINE_HIST

000005 WHERE ITEM_NUMBER = :DG038-ITEM-NUMBER AND

000006 STORE_NUMBER = :DG038-STORE-NUMBER AND

000007 SALE_PRICE > 0 AND

000008 (PURCHASE_DATE BETWEEN

000009 :PROCESS-BEGIN-DATE AND :PROCESSING-DATE);

10) F3 which will take you to the PPA Quick Explain - Explain Options. Go to A.8 and follow the steps.

These steps will take you to the end and give you your report.

III. Explain Strategy Services

This section will walk you through some examples of using Explain Strategy Services. Like Quick Explain, there are also two different ways to use Explain Strategy Services. One is by using Expert Mode meaning you can explain an existing (bound) package. The second option is using Regular Mode which allows you to execute free form SQL statements stored in a file (not bound).

A. The first example will be using Regular Mode.

1) Please refer to section II Quick Explain (A, 1 thru 5) on how to select Regular Mode.

2) From Plan Analyzer Main Menu enter 2 and press <enter>

COMMAND ==> 2

ACM ==> OFF VSAM ==> OFF Mode ==> O ONLINE

----- DBMZ657

Location ==> LOCAL DB2 SSID ==> DBT Version ==> V5R1M0

EXPLAIN Services

Reporting Services

- | | |
|-------------------------------|-------------------------|
| 1) Quick EXPLAIN | 6) Plan Reporting |
| 2) EXPLAIN Strategy Services | 7) DBRM Reporting |
| 3) Query EXPLAIN Database | 8) Package Reporting |
| 4) Compare EXPLAIN Versions | 9) Object Reporting |
| 5) Update Expert System Rules | 10) Statement Reporting |

Plan/Package Management

Miscellaneous Functions

- | | |
|--------------------------------------|-----------------------------|
| 11) Identify Problem Plan/Package(s) | A) Administrative Functions |
| 12) Identify Problem SQL | P) Profile |
| 13) Plan/Package Utilities | S) Statistics Manager |
| 14) Create User PLAN_TABLE(s) | T) Tutorial |
| | BP) Batch Processor/Submit |
| | X) Exit Plan Analyzer |

3) The PPA Explain Strategy Services screen appears. Enter a C under CMD column (for create) and fill in the Strategy/Version, description and share option. Also make sure the correct SSID is specified (DBT for test, DB2 for production)

PPESM R02.01 ----- PPA Explain Strategy Services ----- 05-07-99 11:52

COMMAND ==> SCROLL ==> CSR

Strategy ==> * Creator ==> DBMZ657 Type ==> E

----- DBMZ657 >

Location ==> LOCAL DB2 SSID ==> DBT Version ==> V5R1M0

STRATEGY T D S +----- LAST UPDATE --
---+

CMD /VERSION DESCRIPTION CREATOR P B O USER DATE
TIME

c test2 **testing** DBMZ657 E N <==== STRATEGY
CREATION

_ TEST TESTING DBMZ657 E N DBMZ657
1999-05-07 11.13

_ V00001 VERSION AUTO CREATED DBMZ657 C N DBMZ657 1999-
05-07 11.14

***** BOTTOM OF DATA

4) On the PPA Explain Strategy Regular Mode screen specify the name of the plan or package that is to be explained or enter selection criteria to view a selection list, and press F3 to save and return you back to the PPA Explain Strategy Services screen.

PPESNE R02.01 ----- PPA Explain Strategy - Regular Mode ----- 05-07-99 12:0

COMMAND ==>

Strategy : TEST2 Type ==> E Profile ==>

Creator : DBMZ657 Share Option ==> N

Version : Description ==> TESTING

----- DBMZ657

Location ==> LOCAL DB2 SSID ==> DBT Target SSID ==> DBT

Specify the name of the plan or package that is to be explained or enter selection criteria to view a selection list.

Type ==> K (P - Plan or K - Package)

Plan/Collid ==> CITBATU1

DBRM/Package ==> CITC130A

Selection List ==> Y (Y - Display plan or package selection list)

(N - Use selection criteria during explain)

Change Options ==> N (Y or N)

5) Your new strategy should appear in the list as shown below. Enter an E on the cmd line (for explain) and press <enter>.

PPESM R02.01 ----- PPA Explain Strategy Services ----- 05-07-99 13:12

COMMAND ==>

SCROLL ==> CSR

Strategy ==> * Creator ==> DBMZ657 Type ==> E

Version Information:

Identifier ====> (Leave blank for system generated ID)

Description ====>

Options:

Replace existing version ====> Y (Y,N)

Update Explain Options ====> Y (Y,N)

7) On the PPA Explain Strategy - Explain Options screen, change the Secondary AUTHID to be the creator of the table

and press <enter>

PPESO R02.01 ---- PPA Explain Strategy - Explain Options ---- 05-07-99 13:20

COMMAND ====>

Strategy : CITTEST Type : E

Creator : DBMZ657 Share Option : N

Version : @AUTO Description : TESTING

----- DBMZ657

Database Options ====> N Historical Database Options

Primary AUTHID ====> DBMZ657 **Secondary AUTHID** ====>
DCSADU1

Update SQL Qualifiers	====> Y	(Override SQL and View qualifiers)
Rule Set SSID	====> DBT	(Subsystem where Rule Sets are stored)
PLAN_TABLE Option	====> R	(C - Commit, R - Rollback)
Explain Type	====> F	(C - Current, F - Future)
Plan Explain Option	====> P	(D - DBRM, P - Package, B - Both)
Process Views (Y, N)	====> N	Parallelism Degree
Target SSID @DEFAULT	====> DBT	Target Rule Set
Uppercase Output	====> N	Save Reports
Save Host Variables	====> N	Access Path Filters
Reports	====> Y	Search Conditions
Catalog Statistics	====> N	Search Filters
Tie PERFORMANCE Data	====> Y	

8) The PPA Batch Processor CardDisplay screen appears. Review the Card Display screen to see if the information is

correct.

- If changes are needed use F3 to back out when necessary OR type CAN on the command line to cancel the

screen.

- If changes are not needed press enter to submit. A Batch Processor In_Progress screen will briefly

appear before the Audit Message File screen appears.

PPBPDI R02.01 ----- PPA Batch Processor Card Display ----- 05-07-99 13:25

COMMAND

SCROLL

Mode ==> O ONLINE

The following Batch Processor input has been generated. Press ENTER
to process, press END to cancel, or enter the EDIT command to edit.

----- DBMZ657

***** TOP OF DATA

.CALL EXPLAIN

.DATA

RULESSID = (DBT)

ACM = (N,DBMZ657)

VERSION = (LATEST)

STRATEGY = (DBT,CITTEST,DBMZ657,@AUTO,REPLACE)

PLANTAB = (ROLLBACK)

PRIAUTH = (DBMZ657)

SECAUTH = (DCSADU1)

SQLQUAL = (DBMZ657)

LINES = (60)

PROCDDF = (Y)

FLOATFMT = (SCI)

PROCVIEW = (N)

```

EXPLTYPE = (FUTURE)

PLANEXPL = (PACKAGE)

VSAM    = (N)

TARGET  = (DBT(@DEFAULT))

PERFTIE = (Y)

REPORT  =
(SUMMARY,COST,ACCESS/SHORT,PREDICATE,DEPENDENCY/SHORT,

        SQLRULE,PLANRULE)

SRCPACK = (DBT,LOCAL,CITBATU1,CITC130A,,,)

.ENDDATA

```

```

***** BOTTOM OF DATA
*****

```

9) Print and/or review the report. Make any necessary changes and rerun if needed.

B. The second example is using *Expert Mode*.

1) Please refer to section II Quick Explain (B, 1 thru 5) on how to select Expert Mode.

2) From Plan Analyzer Main Menu enter 2 and press <enter>

PPM R02.01 ----- PLATINUM Plan Analyzer Main Menu ----- 05-07-99 11:16

COMMAND ==> 2

ACM ==> OFF VSAM ==> OFF Mode ==> O ONLINE

----- DBMZ657

Location ==> LOCAL DB2 SSID ==> DBT Version ==> V5R1M0

EXPLAIN Services

- 1) Quick EXPLAIN
- 2) EXPLAIN Strategy Services
- 3) Query EXPLAIN Database
- 4) Compare EXPLAIN Versions
- 5) Update Expert System Rules

Reporting Services

- 6) Plan Reporting
- 7) DBRM Reporting
- 8) Package Reporting
- 9) Object Reporting
- 10) Statement Reporting

Plan/Package Management

- 11) Identify Problem Plan/Package(s)
- 12) Identify Problem SQL
- 13) Plan/Package Utilities
- 14) Create User PLAN_TABLE(s)

Miscellaneous Functions

- A) Administrative Functions
- P) Profile
- S) Statistics Manager
- T) Tutorial
- BP) Batch Processor/Submit
- X) Exit Plan Analyzer

3) On the PPA Explain Strategy Services screen,

PPESM R02.01 ----- PPA Explain Strategy Services ----- 05-07-99 13:38

COMMAND ==>

SCROLL ==> CSR

Strategy ==> *

Creator ==> DBMZ657 Type ==> E

----- DBMZ657 >

----- DBMZ657

----TARGET--- O

C TY SSID RULE SET P LOCATION SSID PLAN/COLLID DBRM/PKG
STMT

C S_ DBT_ _____ LOCAL _____ DBT_ _____

***** BOTTOM OF DATA

5) The following screen appears. Enter COPY on the command line as well as an A on the first line.

EDIT PPA:CURRENT-SQL-STATEMENT Columns 00001 00072

Command ==> **copy** Scroll ==> CSR

***** Top of Data

==MSG> -Warning- The UNDO command is not available until you change

==MSG> your edit profile using the command RECOVERY ON.

A00001

000002

000003

6) On this edit/copy screen enter the file name where your SQL statement is stored.

Edit/View - Copy

Command ==>

NOTE: At this time your strategy is saved in Explain Strategy Services so you may start from this point on to do explains over and over again on the same SQL statement without having to set it all up. That's the difference between Explain Strategy Services and Quick Explain.

8) On this screen enter a E (for explain) on the cmd line to the left of the strategy

PPESM R02.01 ----- PPA Explain Strategy Services ----- 05-07-99 13:58

COMMAND ==> SCROLL ==> CSR

Strategy ==> * Creator ==> DBMZ657 Type ==> E

----- DBMZ657 >

Location ==> LOCAL DB2 SSID ==> DBT Version ==> V5R1M0

STRATEGY T D S +----- LAST
UPDATE -----+

CMD /VERSION	DESCRIPTION	CREATOR	P B O	USER
DATE	TIME			
_	_____	DBMZ657 E	U <===	STRATEGY
CREATION				
_	CITTEST TESTING	DBMZ657 E	N	DBMZ657 1999-05-07 13.12
_	V00001 VERSION AUTO CREATED	DBMZ657 C	N	DBMZ657 1999-05-07 13.32
_	TEST TESTING	DBMZ657 E	N	DBMZ657 1999-05-07 11.13
_	V00001 VERSION AUTO CREATED	DBMZ657 C	N	DBMZ657 1999-05-07 11.14
E	TESTZ TESITNG	DBMZ657 E	N	DBMZ657 1999-05-07 13.58

***** BOTTOM OF DATA

9) On this screen just press <enter>.

PPESSES R02.01 ----- PPA Explain Strategy - Version Info ----- 05-07-99 14:01

COMMAND ====>

Strategy : TESTZ Type : E Profile ====>

Creator : DBMZ657 Share Option : N

Version : Description : TESTING

----- DBMZ657

Version Information:

Identifier ====> (Leave blank for system generated ID)

Description ====>

Options:

Replace existing version ====> Y (Y,N)

Update Explain Options ==> Y (Y,N)

10) Go to III Explain Strategy Services (A.7 thru 9) and follow the steps. These steps will take you to the end and give

you your report.

APPENDIX A

BPPAUDT R05.01 ----- AUDIT Message File ----- 05-06-99 12:54:23

COMMAND ==>

SCROLL ==> CSR

----- USER ID: DBMZ657

.LIST TERM

RETCODE = 0

.CONNECT DBT

RETCODE = 0

.OPTION NOERRORS

RETCODE = 0

.CALL EXPLAIN

.DATA

RULESSID = (DBT)

ACM = (N,DBMZ657)

VERSION = (LATEST)

STRATEGY = (DBT,,DBMZ657)

PLANTAB = (ROLLBACK)
PRIAUTH = (DBMZ657)
SECAUTH = (DBMADM)
SQLQUAL = (DCSADU1)
LINES = (60)
PROCDDF = (Y)
FLOATFMT = (SCI)
PROCVIEW = (N)
EXPLTYPE = (FUTURE)
PLANEXPL = (PACKAGE)
VSAM = (N)
TARGET = (DBT(@DEFAULT))
PERFTIE = (Y)
REPORT =
(SUMMARY,COST,ACCESS/SHORT,PREDICATE,DEPENDENCY/SHORT,
SQLRULE,PLANRULE)
SRCSQL = (
SELECT SUM(QUANTITY)
INTO :WS-CHG-QTY-SOLD
FROM INM_SALE_LINE_HIST
WHERE ITEM_NUMBER = :DG038-ITEM-NUMBER AND
STORE_NUMBER = :DG038-STORE-NUMBER AND
F1=HELP F2=SPLIT F3=END F4=RETURN F5=RFIND
F6=RCHANGE

F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT
F12=RETRIEVE

```
SALE_PRICE > 0 AND
(PURCHASE_DATE BETWEEN
:PROCESS-BEGIN-DATE AND :PROCESSING-DATE);
--SELECT VALUE(SUM(QUANTITY),0)
-- INTO :WS-CHG-QTY-SOLD
-- FROM INM_SALE_LINE_HIST
-- WHERE ITEM_NUMBER = :DG038-ITEM-NUMBER AND
-- STORE_NUMBER = :DG038-STORE-NUMBER AND
-- SALE_PRICE > 0 AND
-- (PURCHASE_DATE BETWEEN
-- :PROCESS-BEGIN-DATE AND :PROCESSING-DATE);)
.ENDDATA
```

PPA REL. 2.1 ----- Plan Analyzer Enhanced Explain ----- Page 1

DATE 05-06-99

TIME 12:54

User-specified RULESET not found or all requested rules not active

User default for this subsystem will be used

User default RULESET not found or all requested rules not active

PPA default RULESET for this DB2 version will be used

Physical Rules have not been customized and will be discarded

PPA REL. 2.1 ----- Plan Analyzer Enhanced Explain ----- Page 2

DATE 05-06-99

Summary Report

TIME 12:54

EXPLAIN PAGE

PLAN/COLLECTION DBRM/PKG PACKAGE VERSION STMT# TYPE
SQLCODE NUMBER

, ,SQL_SOURCE , 1,SEL , +0 4

Target DB2 SSID: DBT

The Most Severe SQLCODE: +0

Source DB2 SSID: DBT

Total Number of Selects: 1

Plan:

Updates: 0

F1=HELP F2=SPLIT F3=END F4=RETURN F5=RFIND
F6=RCHANGE

F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT
F12=RETRIEVE

BPPAUDT R05.01 ----- AUDIT Message File ----- 05-06-99 12:55:29

COMMAND ==>

SCROLL ==> CSR

----- USER ID: DBMZ657

DBRM: Inserts: 0
Stmt: Deletes: 0

PPA REL. 2.1 ----- Plan Analyzer Enhanced Explain ----- Page 3

DATE 05-06-99 Cost Report TIME 12:54

Relative Cost of CPU and I/O utilization. Most expensive SQL listed first.

RELATIVE COST PAGE

PLAN/COLLECTION DBRM/PKG PACKAGE VERSION STMT# TYPE (desc
order) NUMBER

, ,SQL_SOURCE , 1,SEL +0.5091 E+03 4

PPA REL. 2.1 ----- Plan Analyzer Enhanced Explain ----- Page 4

DATE 05-06-99 SQL Statement Detail Reports TIME 12:54

Source DB2 SSID: DBT Date/time: 05-06-99, 12:54:21:80

Plan: DB2 SSID : DBT

DBRM: SQL Code : +0

Stmt: 1

Message :

SQL Statement Text:

SELECT SUM

(

QUANTITY

)

INTO :WS-CHG-QTY-SOLD

FROM INM_SALE_LINE_HIST

WHERE ITEM_NUMBER = :DG038-ITEM-NUMBER

AND STORE_NUMBER = :DG038-STORE-NUMBER

AND SALE_PRICE > 0

AND

(

PURCHASE_DATE BETWEEN :PROCESS-BEGIN-DATE

F1=HELP F2=SPLIT F3=END F4=RETURN F5=RFIND
F6=RCHANGE

F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT
F12=RETRIEVE

BPPAUDT R05.01 ----- AUDIT Message File ----- 05-06-99 12:55:56

COMMAND ==>

SCROLL ==> CSR

----- USER ID: DBMZ657

AND :PROCESSING-DATE

)

Access Path Analysis:

		--Sorts--	C	P	P
Data		M	New	Comp	P F AAJJSSA G
Table name	Access Index Name	C	UJOG	UJOG	Lck F E DGDGCNR R

INM_SALE_LINE_HIST	IXDATA	CITI035Z	3		IS S R

SQL Dependency Analysis:

TABLESPACE	T	NACTIVE				
TABLE/ALIAS/VIEW/SYNONYM	Y	CARD	NPAGES	PCTPAGES		
PCTRC						
INDEX	(# COLUMNS)	P	1STKEYCARD	FULLKEYCAR	NLEAF	NLVL
CLUST						

CITUDB01.CITTS035		TS	49140			
DCSADU1.INM_SALE_LINE_HIST		TB	+0.20 E+07	47448	96	0
DCSADU1.CITI035Z		IX	+0.19 E+02	+0.26 E+05	2733	3 88
						3
DCSADU1.CITP035A		IX	+0.62 E+04	+0.20 E+07	15100	3 93

(PRIMARY) 4

SQL Predicate Analysis:

Predicate	Filter	Index Sarge	Factor		

STATEMENT #001					
---> ITEM_NUMBER = :DG038-ITEM-NUMBER	YES	YES	0.05263		
---> STORE_NUMBER = :DG038-STORE-NUMBER	YES	YES	0.12500		
---> SALE_PRICE > 0	YES	YES	0.33333*		
F1=HELP	F2=SPLIT	F3=END	F4=RETURN	F5=RFIND	F6=RCHANGE
F7=UP	F8=DOWN	F9=SWAP	F10=LEFT	F11=RIGHT	F12=RETRIEVE
BPPAUDT R05.01 ----- AUDIT Message File ----- 05-06-99 12:56:18					
COMMAND ==>	SCROLL ==> CSR				

USER ID: DBMZ657					

---> PURCHASE_DATE BETWEEN :PROCESS-BEGIN-DATE AND	YES				
YES 0.03333					

:PROCESSING-DATE

PPA REL. 2.1 ----- Plan Analyzer Enhanced Explain ----- Page 5

DATE 05-06-99 SQL Statement Detail Reports TIME 12:54

RETCODE = 0 Explain processing completed.

CONTROL PROCESS CARD:

BATCH PROCESSOR PLAN ==> RBPAPLAN

BATCH PROCESSOR ID ==> (NONE)

STRATEGY NAME ==> (NONE)

DEVICE ALLOCATION UNIT => SYSDA

***** BATCH PROCESSOR COMPLETE *****